

# **Synthesis and Physics of Novel Intermetallic Superconductors**

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In the recent years, several types of new intermetallic materials have renewed interest in intermetallics as model systems. In this talk, I will review synthesis methods, basic physical properties and some aspects of anisotropy of  $\text{MgB}_2$  and new superconducting series  $\text{CeMIn}_5$  ( $\text{M}=\text{Rh}, \text{Ir}, \text{Co}$ ). In the case of  $\text{MgB}_2$  I will address the basic mechanism of superconducting state and I will present temperature and field dependence of its fundamental properties. Work on  $\text{CeMIn}_5$  will be presented in historical context, progressing from the discovery of 115 superconducting family, and ending with some recent results on the gap anisotropy in  $\text{CeCoIn}_5$ . This will be followed by description of current research, research philosophy and possible future directions and collaborations.